Practice Problem

Single correct question

Q.1 The vertex of parabola $y^2 + 6x - 2y + 13 = 0$ is

(A) $(-2, 1)$ (B) $(2, -1)$ (C) $(1, 1)$ (D) $(1, -1)$

Q.2 The value of p such that the vertex of $y = x^2 + 2px + 13$ is 4 units above the x-axis is

(A) ± 2 (B) 4 (C) ± 3 (D) 5

Q.3 The length of the latus rectum of the parabola whose focus is $(3, 3)$ and directrix is $3x - 4y - 2 = 0$, i

(A) 1 (B) 2 (C) 4 (D) 8

Q.4 If the vertex and focus of a parabola are $(3, 3)$ and $(-3, 3)$ respectively, then its equation is

(A) $x^2 - 6x + 24y - 63 = 0$ (B) $x^2 - 6x + 24y + 81 = 0$

(C) $y^2 - 6x + 24x - 63 = 0$ (D) $y^2 - 6y - 24x + 81 = 0$

Q.5 The parabola having its focus at $(3, 2)$ and directrix along the y-axis has its vertex at

(A) $\left(\frac{3}{2}, 1\right)$ (B) $\left(\frac{3}{2}, 2\right)$ (C) $\left(\frac{3}{2}, \frac{1}{2}\right)$ (D) $\left(\frac{3}{2}, \frac{-1}{2}\right)$

Q.6 The directrix of the parabola $x^2 - 4x - 8y + 12 = 0$ is

(A) $y = 0$ (B) $x = 1$ (C) $y = -1$ (D) $x = -1$

Q.7 Which one of the following equations represented parametrically, represents equation to a parabolic profile

(A) $x = 3\cos t\,;\ y = 4\sin t$ (B) $x^2 - 2 = -2\cos t\,;\ y = 4\cos^2\frac{t}{2}$

(C) $\sqrt{x} = \tan t\,;\ \sqrt{y} = \sec t$ (D) $x = \sqrt{1 - \sin t}\ ;\ y = \sin\frac{t}{2} + \cos\frac{t}{2}$

Q.8 The locus of the point of trisection of all the double ordinates of the parabola $y^2 = lx$ is a parabol whose latus rectum is

(A) $\frac{l}{9}$ (B) $\frac{2l}{9}$ (C) $\frac{4l}{9}$ (D) $\frac{l}{36}$

Q.9 The straight line $y = m(x - a)$ will meet the parabola $y^2 = 4ax$ in two distinct real points if

(A) $m \in R$ (B) $m \in [-1, 1]$

(C) $m \in (-\infty, 1] \cup [1, \infty)R$ (D) $m \in R - \{0\}$

Q.10 The length of the intercept on y – axis cut off by the parabola, $y^2 - 5y = 3x - 6$ is

(A) 1 (B) 2 (C) 3 (D) 5

Q.11 If the line $x - 1 = 0$ is the directrix of the parabola $y^2 - kx + 8 = 0$ then one of the values of 'k' is

(A) 1/8 (B) 8 (C) 4 (D) 1/4

Q.12 Length of the latus rectum of the parabola $25[(x-2)^2 + (y-3)^2] = (3x - 4y + 7)^2$ is

(A) 4 (B) 2 (C) 1/5 (D) 2/5

Q.13 Maximum number of common chords of a parabola and a circle can be equal to

(A) 2 (B) 4 (C) 6 (D) 8

Multiple correct type question

Q.14 The locus of the mid point of the focal radii of a variable point moving on the parabola, $y^2 = 8x$ is a parabola whose

(A) Latus rectum is half the latus rectum of the original parabola
(B) Vertex is $(1, 0)$
(C) Directrix is y-axis
(D) Focus has the co-ordinates $(2, 0)$

Q.15 If from the vertex of a parabola $y^2 = 4x$ a pair of chords be drawn at right angles to one another and with these chords as adjacent sides a rectangle be made, then the locus of the further end of the rectangle is

(A) an equal parabola
(B) a parabola with focus at $(9, 0)$
(C) a parabola with directrix as $x - 7 = 0$
(D) a parabola having tangent at its vertex $x = 8$

Integer type question

Q.16 Find the vertex, focus, latus rectum, axis and the directrix of the parabola $x^2 + 8x + 12y + 4 = 0$.

Q.17 A parabola $y = ax^2 + bx + c$ crosses the x – axis at $(\alpha, 0)$ $(\beta, 0)$ both to the right of the origin. A circle also passes through these two points. Then find length of a tangent from the origin to the circle.

Answer key

Q.1	A	Q.2	C	Q.3	B	Q.4	C	Q.5	B
Q.6	C	Q.7	B	Q.8	A	Q.9	D	Q.10	A
Q.11	C	Q.12	D	Q.13	C				
Q.14	A, B, C, D	Q.15	A, B, C, D						

Q.16 V(–4, 1) S(–4, –2), axis : $x + 4 = 0$, directrix : $y - 4 = 0$, LR = 12

Q.17 $\sqrt{\frac{c}{a}}$